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## Research Trends and Issues in the Studies of Twitter: A Content Analysis of Publications in Selected Journals (2007 – 2012)

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### Abstract

This paper provides research trends and content analysis of studies in the field of Twitter that were published in seven major journals: **The Turkish Online Journal of Educational Technology (TOJET)**, **Educational Technology & Society (ET&S)**, **Educational Technology Research & Development (ETR&D)**, **Computers & Education (C&E)**, **Learning and Instruction (L&I)**, **Australasian Journal of Educational Technology (AJET)** and **British Journal of Educational Technology (BJET)**. These articles were cross analyzed by published years. Content analysis was implemented for further analysis based on their research topics, issues category, research settings and samplings, research designs, research method and data analysis. The results of the analysis also provide insights for educators and researchers into research trends and issues of Twitter.

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## 1. Introduction

Twitter was founded in 2006 by Jack Dorsey (@Jack), Evan Williams (@Ev) and Biz Stone (@Biz), programmers at the San Francisco podcasting company Odeo Inc. (Picard, 2011). The increasing number of educators, who use Twitter as part of their teaching and learning process, does create a niche area for researchers to study its use in education. In parallel to this increasing interest of the use of Twitter in education is the increasing number of studies conducted and published regarding Twitter use in education that have covered a wide range of topics; such as language learning, students' engagement and grades, students' collaboration and success, students' perception toward teachers or instructors and also higher education scholars' participation on Twitter (Johnson, 2011; Junco, Elavsky & Heiberger, 2013; Junco, Heiberger & Loken, 2011; Lomicka & Lord, 2012; Veletsianos, 2012). With the overwhelming numbers of published articles about Twitter usage in education, there is indeed a need to review the research trends and issues about the topic in order to help future researchers in related fields to design and framed their research interest.

Although previous studies have shown that there were always enthusiasm for new technology, over time this perception may change as the 'novelty wears off' (Lomicka & Lord, 2012). With more than 175 million tweets per day (Infographics Labs, 2012) from 200 million active users (Bennet, 1993) six years after its introduction, the future of Twitter seems promising yet nothing can be said for sure. Moreover, by analyzing the current trends and issues in the studies of Twitter, this study will help generalizing the findings from the related researches and enable educators to decide whether Twitter usage will benefit them or otherwise. It is crucial, therefore to examine research trends and issues concerning Twitter in education based on the published articles related to the topic at this point.

As such, this paper intends to provide insights into the research trends and issues in the studies of Twitter through content analysis of selected journals from 2007 to 2012, covering seven major journals: TOJET, ET&S, ETR&D, C&E, L&I, AJET and BJET. The research questions that need to be answered by this paper are:

1. What are the research topics and research setting and sampling related to Twitter that were published in these selected journals from 2007 – 2012?
2. What are the main issues category and source of article related to Twitter that were published in these selected journals from 2007 – 2012?
3. What types of research design, research method and data analysis have been applied in article research of Twitter that were published in these selected journals from 2007 – 2012?

## 2. Review on Studies of Twitter

The prevalent use of Twitter has increased in education; thus learning is no longer restricted to the four walls of classroom. By trying to move away from the traditional pen and paper classroom, Twitter as a new form of communication – a Web 2.0 micro blogging tool, appears to be blending harmoniously well with modern thinking and current educational practice as it ensures that learners will have more opportunities to be independent in their study and research (Crook, 2008).

Although it is always considered the world's second most popular social media platform after Facebook, Bruns (2012) listed a few characteristics of Twitter that makes it no less appealing than Facebook, such as (1) 140-characters updates that are designed for brief messaging, (2) flat and simple network structures, (3) public

and visible to all messages from users or private and visible only to approved ‘followers’ and few other mechanisms such as #hashtag and @replies.

The benefit of Twitter in education does not only apply to students but to educators as well. The earlier studies that were published when Twitter started being used in the classroom mainly focusing on students’ online practices (Ito, Baumer, Bittanti, boyd, Cody, Herr-Stephenson, Horse, Lange, Mahendran, Martinez, Pascoe, Perkel, Robinson, Sims & Lisa, 2009). It was then followed by few studies that attempt to examine the relationship of social networks and students’ achievement and outcomes (Kirschner & Karpinski, 2010; Junco et al., 2011). Hew (2011) in his studies also tried to find students’ attitudes towards online social networks.

After the first wave of studies about Twitter in education in general; which is mainly to see the relationship about Twitter and students, researchers then started focusing on Twitter usage and benefit in specific subject. The top of the list is the language learning. Borau, Ullrich, Feng and Shen (2009) in their research were focusing on using Twitter to train communicative and cultural competence. Lomicka and Lord (2012) proved that Twitter usage among language learner can be used to develop sense of community and social presence. The importance of Twitter to enhance social presence was again studied by Dunlap and Lowenthal (2009). There are also researchers who used Twitter in their studies to be compared with Facebook (Junco, 2012; Ranieri, Manca, & Fini, 2012).

It has been six years since Twitter being established on July 2006. With 500 million registered users and 340 million tweets daily and being nicknamed as “SMS of the internet”, there is still a big room for future researchers to study the effect, benefit, advantage, usage or looking into the current trend and predict the future of Twitter in every aspects of life. This phenomena called for a need to conduct a generalization for previous studies as the basis for future studies related to Twitter.

### 3. Methodology

This studies use methodology content analysis to analyse trend and issue about twitter. Why content analysis? Stemler (2001) confirmed that content analysis indeed is a powerful method to examining trends and patterns in documents. It is also a useful technique to discover and describe the focus of individual, group, institutional or social attention (Weber, 1990). By conducting a content analysis from the seven selected journals in the timeframe of 2007 to 2012, this study will look out for issues and trend that underlies the studies of Twitter currently.

Besides that, this study cross-examines papers related to Twitter; published in seven selected journals from 2007 to 2012. The selected journals were **TOJET**, **ET&S**, **ETR&D**, **C&E**, **L&I**, **AJET** and **BJET**. These journals were chosen based on its impact factor as released by Thomson Scientific 2011 Journal Citation Reports and Institute of Scientific Information (ISI) Journal Citation Reports. There was 4319 document items have been published by these journals from 2007-2012. However, only papers that were identified as ‘article’ were chosen and analysed.

Six databases were chosen for the cross-examine purpose. The different databases were chosen due to the availability of certain journals and accessibility of the abstract and full text for the selected articles. The databases were; **EBSCOhost**, **ProQuest Education Journals**, **Science Direct**, **Springer Link**, **Web of Science** and **Wiley Online Library**. One search engine was also used for the purpose above. The search engine used was Google Scholar.

First procedure in conducting this research is setting three items to search for the related articles in all databases above. They are; (1) Selected Journal Name for Journal Name, Publication Title or Journal/Book Title

column, (2) Twitter for Topic or Title column and (3) 2007-2012 for Time span, Year or Coverage column. This step is important to ensure standardization in order to search the related articles in spite of the different interface between all databases.

There were 110 articles have been identified from the first procedure. Next procedure consists of further comprehensive review which needs the researchers to examine 110 articles carefully to determine the articles which is related to Twitter. Finally, a total of five articles were selected for the analysis.

### ***Trend Analysis***

Trend analysis of an article can show the periodic discussion taking place in a knowledge discipline (Erford, Miller, Duncan, & Erford, 2010). In the analysis of trend and frequency, justification for selection of articles is found in the TOJET, ETS, C&E, ETR&D, AJET and BJET only.

### ***Content Analysis***

Based on content analysis or the process of summarizing and reporting of written data (Cohen et al., in Cowan, 2011), the research topics in the articles selected for analysis were categorized according to key words in the given abstracts, issues discussed as well as research scope. Throughout the data analysis carried out, each category identified was further clarified using thematic analysis. At the end of the analysis, the categories and sub-categories of the articles are as follows:

1. Research topics
2. Issues category
3. Research settings and samplings
4. Research designs
5. Research Method
6. Data Analysis

### **4. Findings**

#### **Frequency and trend analysis**

Based on frequency analysis, there were four articles listed in the shortlist related to the topic of Twitter. Three of these were found in BJET, ETS and C&E for the period 2007 until 2012. Following frequency analysis, there were two shortlisted articles related to Twitter in the BJET, one article each in Journal of ETR&D and C&E for the period 2007 until 2012. Analysis of number of articles is given in Table 1.

Table 1  
*Number of Articles Related to Twitter According **Yearly Phases***

No	Journal	Frequency	References
1	<b>BJET</b>	2	Shesen Guo, Ganzhou Zhang, & Run Zhai, 2011; Fei Gao, TianLuo, Ke Zhang, 2012.
2	<b>C&amp;E</b>	1	Martin Ebner, Conrad Lienhardt, Matthias Rohs, & Iris Meyer, 2010
3	<b>ET&amp;S</b>	1	Rita Kop, 2012

***Content Analysis of Current Articles on Studies Related to Twitter***

For the latest trend related to twitter, this chapter also considers issues in the published articles in the BJET, ET&S and C&E for the years from 2007 until 2012 only. Given the limitation of the date of publication four articles related to twitter were found. The selected articles were type of research based articles.

Research based articles are content analyzed based on several constructs such as title, research topic, issues category, research setting and sampling, research design, research method and data analysis. Table 2 show the results of content analysis of four selected articles related to Twitter categorized according to two categories namely research based articles and non research based articles.

Table 2. Content analysis and current focus on studies of Twitter.

Article Title	Source	Research Topic	Issues Category	Research Sample and Setting	Research Design	Research Method	Data Analysis
<b>Use of Twitter for formative evaluation: Reflections on trainer and trainees' experience.</b>	Liwen Chen; Tung-Liang Chen. <b>BJET</b> . March 2012, Vol. 43, Issue 2, E49-E52	Twitter benefit, barriers and method.	Perceptions of trainer and trainees on using the Web 2.0 application.	39 colleges, university and a private university student in Taipei.	Case study	Interview, observation, participation	Thematic analysis
<b>Integrating readability index into Twitter search engine.</b>	Sheshen Guo, Ganzhou Zhang & Run Zhai. <b>BJET</b> September 2011, Vol. 42, Issue 5, E103-E105	Application Program	Challenges to enhance capability by using Twitter	Twitter search engine	Descriptive research	Exploratory project	Thematic analysis
<b>Micro blogs in higher education: A chance to facilitate informal and process-oriented learning?</b>	Martin Ebner, Conrad Lienhardt, Matthias Rohs & Iris Meyer. <b>C&amp;E</b> August 2010, Vol. 55, Issue 1, 92-100	Twitter for process-oriented learning, higher education	Chances to facilitate informal and process-oriented learning	Students of University of Applied Science of Upper Austria	Case Study	Observation	Thematic analysis
<b>The unexpected connection: Serendipity in human mediation in networked learning</b>	Rita Kop. <b>ET&amp;S</b> . April 2012. Vol. 15, Issue 2, 2-11	Recommend er, RSS, Twitter, Serendipity, Networked learning	Challenges and opportunities for learning towards Twitter.	recommen ders, RSS and micro-bloggers	Qualita- tive research	Literature Review	Content analysis

## 5. Discussion and Findings

In this section, the authors summarized and discussed the major findings as follows:

Only four articles were found to focus on researches pertaining to Twitter. A published article focused on the benefits, barriers and methods in Twitter. Another article studied the application program. The third article looked at the use of Twitter for process-oriented learning and higher education. The final article studied recommender, RSS, Twitter, Serendipity and networked learning.

The main issues category that were discussed in these selected journal was user's perceptions on using of Twitter. Second and fourth article are concern on the issues of challenges which is to enhance capability by using Twitter and opportunities for learning towards Twitter. Third articles discuss about chances to facilitate informal and process-oriented learning. The source of article related to Twitter were Liwen Chen and Tung-Liang Chen, (2011), in *BJET*, 43(5), E49-E52; Shesen Guo, Ganzhou Zhang and Run Zhai, (2011), in *BJET*, 42(5), E103-E105; Martin Ebner, Conrad Lienhardt, Matthias Rohs & Iris Meyer 2010, in *C&E* Vol. 55, Issue 1, 92-100; Rita Kop (2012) (Special Issue Articles) *ET&C*, 15 (2), 2–11.

From these four articles, 39 students from institutions of higher learning in Taipei became samples. Research sample for the second article was the Twitter search engine. Students of University Of Applied Science Of Upper Austria became research samples for the third article while research samples for the fourth article were recommender, RSS and micro blogging.

Altogether, there were eight research methods used in the articles on Twitter, among them interview, observation, participation, exploratory project, and literature review. In design analysis, two articles featured different designs, namely descriptive research and qualitative research. Meanwhile, the other two articles featured case study design.

In data analysis, it can be concluded that three articles involved thematic analysis. Only one was in the content analysis category.

## 6. Conclusion and Implications

In general, the results from the analysis done on articles pertaining to Twitter published by *BJET*, *C&E* and *ET&C* revealed that the use of Twitter is still new in the arena of teaching and learning as it was first introduced in 2006. However, it was proven through the articles that Twitter can be the trending networking medium and learning method. These articles based on research should be highlighted and displayed in various locations to support and expand this alternative educational tool as an innovation in the world of education.

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